

pseudocefalio ausente versus presente, flores más cortas (30–52.7 mm vs. 110 mm), con estigma no emergente sobre los estambres versus estigma emergente sobre los estambres.

Comparando con los géneros bolivianos existentes, *Weberbauerocereus* esta más asociado con *Yungasocereus* F. Ritter, se diferencian en las ramificaciones (muchas ramificaciones curvadas desde la base vs. pocas ramificaciones erectas desde la base), el número de costillas (entre cinco a ocho no tuberculadas sin ranuras vs. seis a 10 tuberculadas con ranuras entre las aréolas), las aréolas y espinas (grandes, largas, tomentosas con espinas numerosas vs. pequeñas, redondas con cuatro a 12 espinas) y fruto (5 cm vs. 2.8 cm largo).

Paratipos. BOLIVIA. **Dpto. La Paz:** Prov. Franz Tamayo, Área Natural Madidi, Azariamas al N de Apolo, 14°20'43"S, 68°32'21"W, 6 jun. 2005 (est.), A. Fernández, L. Cayola, J. Uzquiano, P. Sevillanos & G. Jove 120 (LPB); Área Natural Madidi, Unapa, 14°32'32"S, 68°29'42"W, 970 m, 2 sep. 2004 (est.) [cultivándose en el Jardín Botánico de La Paz, IE-UMSA], L. Cayola, A. Antezana, F. Miranda, C. Cuevas & D. Cuevas 822 (LPB); Parque Nac. Madidi, camino de Apolo–Azariamas, Arroyo Pintata, 14°27'57"S, 68°32'9"W, 19 feb. 2003 (est.), A. Araujo-M., H. Cabrera, M. Calzadilla, F. Canqui, L. Cayola, C. Maldonado, N. Paniagua, R. Alvarez, A. Alvarez & M. Alvarez 445 (LPB, MO); Parque Nac. Madidi, camino Apolo–Azariamas, Arroyo Pintata, 14°28'41"S, 68°32'13"W, 4 mar. 2003 (est.), N. Paniagua, H. Cabrera, F. Canqui, M. Alvarez & A. Alvarez 5647 (LPB, MO).

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Two New Species of *Hedysarum* (Fabaceae) from Iran

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ABSTRACT. *Hedysarum orumiehense* Ranjbar and *H. neyshaboricum* Ranjbar, two new species endemic to Iran, are described and illustrated. Both new species belong to section *Multicaulia* Boiss. in *Hedysarum* L. (Fabaceae) and are distinct among Iranian species. The former species is closely related to *H. atropatanum* Bunge ex Boiss. and is distinguished by its glabrous pods, the leaflets in eight to 11 pairs, and the longer corolla wings (10–11 mm). The latter is distinguished from *H. paucifoliolatum* Ranjbar & Olanj by its longer peduncles (20–27 cm), stipules (7–9 × 4–5 mm), and corolla standard (15–17 × 13–14 mm). Both *H. orumiehense* and *H. neyshaboricum* are evaluated as Vulnerable (VU) according to IUCN Red List criteria.

Key words: Fabaceae, *Hedysarum* sect. *Multicaulia*, Iran, IUCN Red List.

Hedysarum L., with ca. 200 species, is a large genus within the tribe Hedysareae (Fabaceae) and is distributed in temperate to boreal regions of the Northern Hemisphere (Vassiljeva, 1987). The main centers of diversity are in Middle Asia and North America, but the genus also occurs in Europe and the Mediterranean region (Yakovlev et al., 1996; Ranjbar et al., 2007a, b). Plants of the genus are perennial herbs, rarely semishrubs, and they occur in varied habitats including alpine and arctic meadows, stony grasslands, deserts, or seashores (Ranjbar et al., 2007a, b). The flora of Iran is relatively rich in *Hedysarum* species with 28 species, of which 16 are endemic (Rechinger, 1984; Ranjbar et al., 2004, 2006, 2007a, b), and new *Hedysarum* taxa have been described recently for Iran (Ranjbar et al., 2004, 2006). In October 2005, I made an expedition to the Silvaneh range near Orumieh, in western Iran, an area adjacent to eastern Turkey. During field collection, the specimen Ranjbar 7092 was initially identified as *H. atropatanum* Bunge ex Boiss. However, its glabrous pod and many leaflets distinguish it from *H. atropatanum*, which has an appressed pubescent pod. As a result, the new species *H. orumiehense* Ranjbar (Fabaceae) is described here. A second new species, *H. neyshaboricum* Ranjbar, also described here, differs from *H. paucifoliolatum* Ranjbar & Olanj by having longer peduncles and flowers.

1. *Hedysarum orumiehense* Ranjbar, sp. nov.

TYPE: Iran. Azarbaijan Garbi: Orumieh, Shahr-Chai dam, near Band, 1530 m, 11 June 2005 (fl., fr.), *M. Ranjbar* 7092 (holotype, BASU; isotypes, FUMH, MO, TARI, W). Figure 1.

Haec species *Hedysaro atropatano* Bunge ex Boiss. affinis, sed ab eo foliolis 8- ad 11- (nec 4- ad 6-) jugatis, racemo 22- ad 33- (nec 10- ad 15-) floro, petalis longioribus vexillo 17–18 mm (nec 14–15 mm) alis 10–11 mm (nec 3–4 mm) atque legumine aculeis flavorubris dense oblecto differt.

Plants to 40 cm tall, with numerous wiry stems from a tough rootstock, appressed pubescent; stems branched only from near the base; caudex to 5 mm diam. Stipules 5–6 × 4–5 mm, light brown, slightly connate on the side opposite to the leaves, the lower ones triangular, the upper narrowly triangular and acuminate, adnate to the petiole for 1–1.5 mm, sparsely to loosely covered with appressed white trichomes (ca. 0.3 mm); leaves imparipinnate, 6.5–11.5 cm; petioles of lower leaves 10–11.5 cm, those of upper leaves often shorter, to 5 mm long, subdensely to loosely covered with appressed white trichomes; leaflets in 8 to 11 pairs, oblong to lanceolate or elliptic, rarely obovate, 8–18 × 3–9 mm, apex obtuse to rounded, mostly shortly mucronulate, densely appressed pubescent abaxially (trichomes ca. 0.5 mm), grayish, adaxially densely to sparsely appressed pubescent (trichomes 0.5–1 mm), green. Inflorescence a dense raceme of 22 to 33 flowers, oblong-ovate, elongating in fruit to 28 cm; peduncles 12.5–15.5 cm, 1–1.5 mm thick, erect to ascending, exceeding the leaves, densely to loosely appressed pubescent (trichomes ca. 0.5 mm); bracts 3–3.3 × ca. 1 mm, linear-lanceolate, membranous; pedicels 2–3 mm, appressed pubescent. Flowers erect to slightly spreading to nodding; bracteoles linear, shorter than the calyx tube, ca. 1.5 mm, loosely covered by short appressed trichomes; calyx 6–7 mm, tubular-campanulate, densely covered with short appressed white trichomes (ca. 0.3 mm); calyx teeth narrowly linear to subulate, 3–5 mm; corolla flushed with mauve, standard 17–18 mm, blade 9–10 mm wide, obovate, apex slightly emarginate, gradually attenuate to the base, wings lingulate,



Figure 1. *Hedysarum orumiehense* Ranjbar. —A. Fertile habit. —B. Calyx. —C. Standard. —D. Keel. —E. Immature pod. —F. Wings. —G. Androecium. Drawn from the holotype *Ranjbar 7092* (BASU). Scale bar: A = 3 cm; B–G = 1.5 cm.

shorter than the standard, 10–11 mm, apex rounded to subobtuse; blades 6–7 × 2.5–3 mm; claw 2.5–3 mm, keel 18–19 mm, ± equaling the standard; blades subtriangular, 13–14 × 6–7 mm, obtuse at the

apex; auricle indistinct, claw 4–5 mm, staminal tube obliquely cut; ovary linear, short white appressed pubescent; style glabrous. Legumes immature, 3- to 5-jointed, linear, straight, densely covered with

yellowish red prickles, but without appressed white trichomes or only densely pubescent at margin.

Distribution and habitat. *Hedysarum orumiehense* has a restricted distribution. It occurs on the eastern slope of the Silvaneh and Razhan mountains in West Azerbaijan Province, Iran. It was collected from a small population growing on dry steppe and stony clay along the roadside.

IUCN Red List category. *Hedysarum orumiehense* is known only from the type locality, where one small population consisting of no more than 20 plants was observed sparsely scattered near a small village. Therefore, this species is classified as Vulnerable (VU), a category that includes taxa with small populations that could be at risk, according to IUCN Red List criteria (IUCN, 2001).

Phenology. Flowering occurs in May and June; fruit ripening occurs from June to August.

Etymology. The new species is named after the type locality, the town of Orumieh, in West Azerbaijan Province, Iran.

Taxonomic relationships. Although I have not seen the type of *Hedysarum atropatanum* at W, the original description agrees in all respects with the material for *Ranjbar 6090* (BASU), which is from the type locality Seidkhodzi near Khoy (Boissier, 1872; Rechinger, 1984). In addition, *H. atropatanum* is the only other species of *Hedysarum* sect. *Multicaulia* Boiss. known from the Iranian province of West Azerbaijan. *Hedysarum orumiehense* was seen in the field by the author and is known from only five specimens from the type locality that are deposited at BASU.

The new species is closely related to *Hedysarum atropatanum* in the similar shape, size, and indumentum of the leaflets and in the stipules, which are connate on the side opposite to the leaves in both species. *Hedysarum orumiehense* differs from *H. atropatanum* by its larger corolla (17–18 mm vs. 14–15 mm) and wings (10–11 mm vs. 3–4 mm), the densely yellowish red aculeate vs. white aculeate legumes, the greater number of leaflets (eight to 11 vs. four to six), and the more densely flowered axillary racemes (22- to 33-flowered vs. 10- to 15-flowered).

2. *Hedysarum neyshaboricum* Ranjbar, sp. nov.

TYPE: Iran. Khorasan: N of Neyshabor, around Abshar, Bar village, 1850–1900 m, 20 May 1996, A. Rafeie & H. Zangooei 27013 (holotype, FUMH; isotype, BASU). Figure 2.

Haec species *Hedysaro paucifoliolato* Ranjbar & Olanj affinis, sed ab eo plantis 45–50 cm (nec usque ad 35 cm tantum) altis, stipulis 7–9 × 4–5 mm (nec 5–6 × 2–3 mm), foliis 11–14 cm (nec 3.5–6.5 cm) longis, foliolis 2- ad 4- (nec 1- vel 2-[vel 3-]) jugatis, pedunculo 20–27 cm (nec 7–10 cm) longo, racemo 22- ad 30- (nec 10- ad 15-) floro, petalis majoribus vexillo 15–17 × 13–14 mm (nec 10–11 × 7–8 mm) alis 7–8 mm (nec 4–5 mm) longis atque ovario glabro (nec trichomatibus albis appressis dense vestito) differt.

Plants to 50 cm tall, with numerous stems from a tough rootstock, appressed pubescent; stems 9–19 cm, branched from near the base; caudex to 1 cm, covered with stipule and petiole remnants. Stipules 7–9 × 4–5 mm, light brown to membranous, semiconnate, the lower ones triangular, the upper narrowly triangular and acuminate from a wide base, adnate to petiole for 2–3 mm, sparsely to loosely covered with appressed white trichomes (0.5–0.8 mm); leaves imparipinnate, 11–14 cm; petioles of lower leaves 2.9–4.5 cm, those of upper leaves often shorter, 0.8–2.5 cm, densely to loosely covered with appressed white trichomes; leaflets in 2 to 4 pairs, ovate-lanceolate, 20–55 × 10–34 mm, apex obtuse to round or rarely slightly retuse, mostly shortly mucronulate, loosely to sparsely appressed pubescent abaxially (0.4–1 mm), green to grayish green, adaxially loosely to sparsely appressed pubescent. Inflorescence a dense raceme of 22 to 30 flowers, oblong-ovate; peduncles 20–27 × 0.25–0.4 cm, erect to ascending, exceeding the leaves, densely to loosely appressed pubescent (trichomes 0.2–0.6 mm); bracts 5–6 mm, linear-lanceolate, membranous to papery, apex purplish; pedicels 2–3 mm, appressed pubescent, the upper flowers often sessile. Flowers erect to spreading; bracteoles shorter than the calyx tube, glabrous to sparsely covered by short appressed trichomes; calyx 6–7 mm, tubular-campanulate, densely covered by short appressed white trichomes (0.4–0.7 mm); calyx teeth narrowly linear to subulate, 3–5 mm; corolla dark purple, standard 15–17 mm, blade 13–14 mm wide, obcordate, apex deeply emarginate, gradually attenuate to the base, glabrous, wings lingulate, shorter than the standard and keel, 7–8 mm, apex rounded; blades 5–6 × ca. 3 mm; auricle shorter than claw, claw ca. 2 mm, keel 13–14 mm, exceeding the wings; keel blades subtriangular, 10–11 × 7–7.5 mm, apex subacute; auricle indistinct, claw ca. 4 mm; staminal tube obliquely cut; ovary with a stipe 0.5–1 mm, with 4 or 5 ovules, linear, glabrous; style glabrous. Legumes not seen.

Distribution and habitat. *Hedysarum neyshaboricum* is a narrowly distributed endemic known only from the dry zone of the mountainous region near Abshar, Bar village, north of Neyshabor in Khorasan Province, Iran, growing on limestone and stony clay substrates.



Figure 2. *Hedysarum neyshaboricum* Ranjbar. —A. Habit with details of flower and pod. —B. Calyx. —C. Standard. —D. Keel. —E. Wings. —F. Pistil. —G. Androecium. Drawn from the holotype Rafeie & Zangooei 27013 (FUMH). Scale bar: A = 3 cm; B–G = 1.5 cm.

IUCN Red List category. The type locality of the new species is the unprotected Binalood mountainous region; therefore, *Hedysarum neyshaboricum* is assessed here as Vulnerable (VU)

according to IUCN Red List criteria (IUCN, 2001). The conservation status cannot be more precisely determined because this species is known only from a single collection.